ENVIRONMENTAL ASSESSMENT

TAINTER GATE CABLE REPLACEMENT
LAKE RED ROCK
MARION COUNTY, IOWA

APPENDIX D

CONSTRUCTION PROCEDURES FOR TAINTER GATE TOUCH UP PAINTING

APPENDIX D

Red Rock Dam – Lake Red Rock
Des Moines River, Iowa
Tainter Gate Touch-Up Painting

Red Rock Dam is located in Marion County, Iowa, on the Des Moines River, 35 miles southeast of the City of Des Moines, and 142 river miles upstream from its confluence with the Mississippi River. The dam consists of a rolled earth-fill embankment and a gravity concrete outlet control structure that also functions as an emergency spillway. The outlet structure consists of five cable operated tainter gates with a sill elevation of 735 feet NGVD. There are four 1" diameter-lifting cables located at each side of the tainter gates to be used to raise or lower the tainter gates. The Lake Red Rock outlet control structure was designed and constructed with the lake conservation pool level at 725 feet. When the conservation pool was raised in the spring of 1992 to an elevation of 742 feet NGVD, several feet of the tainter gate lifting cables and brackets were permanently submerged. In order to maintain the conservation pool at 742 feet NGVD, the tainter gates must be kept in a closed position making inspection, maintenance and repair of the tainter gates and the tainter gate lifting cables nearly impossible without a drawdown of the conservation pool.

The tainter gate cables (a total of 40) were replaced in 1993. The cables have an estimated service life of 15 years, requiring that they be replaced again in 2007-2008. A drawdown of the conservation pool below the elevation of the cable connection brackets at 735 feet is necessary to replace the cables. During this drawdown, it will be possible to do touch-up painting on the vinyl paint system currently on the tainter gates. During a 2002 periodic inspection, it was found that although the overall the paint system, applied in 1989, is in fair condition; there is some blistering and pealing of paint on the downstream sides of the tainter gates as shown in Figure D1. Rehabilitation of the paint system at areas where blistering or chips have occurred would help to preserve the metal underneath, as well as extend the life of the entire paint system.

Rehabilitation of the vinyl paint system would involve touch-up painting. The process would include sand blasting of the affected areas down to bare metal, applying a primer, and then applying the vinyl paint coating system either by spray or by hand. The paint should not be applied at temperatures below 35^{o}F, without significant measures to mitigate for temperatures at or below freezing. A containment system would have to be constructed at each touch-up paint location to collect excess sand and paint. The last maintenance painting project in 1989, in which the current vinyl paint coating system was applied, included removal of the existing lead based paint on the tainter gates. Therefore, there are no lead based paint removal requirements for touch-up painting or any future painting applications on the tainter gates. It is estimated that complete repainting of the gates and accompanying machinery would take at least 3+ months if the contractor works two shifts, 6 days a week. The touch-up painting is estimated to take 1.6 months (within the timeframe of the proposed 2007 fall drawdown) with a similar schedule, but the time would greatly depend on the number of affected areas that would need rehabilitation. These estimates assume good weather and no delays to the contractor.

Figure D1. Downstream side of Tainter Gate 5 showing blistering paint at the far left of the gate.